

1.

My Code –

```
import java.util.Scanner;

public class FactorialWhileLoop
{
    public static void main(String[] args)
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the non-negative number to process its factorial:");

        int number = input.nextInt();

        int fact = 1;
        int i = 1;

        while (i<=number)
        {
            fact = fact*i;
            i++;
        }
        System.out.println("The Factorial of " + number + "! = "+ fact);
    }
}
```

Output –

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac FactorialWhileLoop.java && java FactorialWhileLoop
Enter the non-negative number to process its factorial: 5
The Factorial of 5! = 120
```

2.

My Code –

```
import java.util.Scanner;

public class FactorialForLoop
{
    public static void main(String[] args)
    {
```

```

Scanner input = new Scanner(System.in);

System.out.print("Enter the non-negative number to process its factorial:
");
int number = input.nextInt();

int fact = 1;
for (int i = 1; i <= number; i++)
{
    fact = fact*i;
}
System.out.println("The Factorial of " + number + "! = "+ fact);
}
}

```

Output –

```

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac FactorialForLoop.java && java FactorialForLoop
Enter the non-negative number to process its factorial: 5
The Factorial of 5! = 120

```

3.

My Code –

```

public class Alphabet
{
    public static void main(String[] args)
    {
        //UpperCase Alphabets
        System.out.print("Uppercase Alphabets: ");
        for (char ch = 'A'; ch <= 'Z'; ch++)
        {
            System.out.print(ch + " ");
        }
        System.out.println();
        //LowerCase Alphabets
        System.out.print("Lowercase Alphabets: ");
        for (char ch = 'a'; ch <= 'z'; ch++)
        {
            System.out.print(ch + " ");
        }
        System.out.println();
    }
}

```

```

//Uppercase Alphabets in Reverse
System.out.print("Uppercase Alphabets in Reverse: ");
for (char ch = 'Z'; ch >= 'A'; ch--)
{
    System.out.print(ch + " ");
}
System.out.println();
//Lowercase Alphabets in Reverse
System.out.print("Lowercase Alphabets in Reverse: ");
for (char ch = 'z'; ch >= 'a'; ch--)
{
    System.out.print(ch + " ");
}
}

```

Output –

```

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac Alphabet.java && java Alphabet
Uppercase Alphabets: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Lowercase Alphabets: a b c d e f g h i j k l m n o p q r s t u v w x y z
Uppercase Alphabets in Reverse: Z Y X W V U T S R Q P O N M L K J I H G F E D C B A
Lowercase Alphabets in Reverse: z y x w v u t s r q p o n m l k j i h g f e d c b a
manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$

```

4.

My Code –

```

import java.util.Scanner;

public class NumberSystem
{
    public static void main(String[] args)
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the non-negative number for binary conversion:");
        int value = input.nextInt();

        int originalValue = value;
    }
}

```

```

String rslt = "";

while (value>0)
{
    int remainder = value%2;
    rslt = remainder + rslt;
    value = value/2;
}

System.out.println("The binary conversion of " + originalValue + " is = "
+ rslt);
}
}

```

Output –

```

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac NumberSystem.java && java NumberSystem
Enter the non-negative number for binary conversion: 10
The binary conversion of 10 is = 1010

```

5.

My Code –

```

import java.util.Scanner;

public class StringAnalyze
{
    public static void main(String[] args)
    {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter a string: ");
        String ch = input.nextLine();

        int isUpperCase = 0;
        int isLowerCase = 0;
        int isDigit = 0;
        int isWhiteSpace = 0;

        for (int i = 0; i < ch.length(); i++)
        {
            char CrntCh = ch.charAt(i);

```

```

        if (Character.isUpperCase(CrntCh))
        {
            isUpperCase++;
        }
        else if (Character.isLowerCase(CrntCh))
        {
            isLowerCase++;
        }
        else if (Character.isDigit(CrntCh))
        {
            isDigit++;
        }
        else if (Character.isWhitespace(CrntCh))
        {
            isWhiteSpace++;
        }
    }

    System.out.println("Uppercase letters: " + isUpperCase);
    System.out.println("Lowercase letters: " + isLowerCase);
    System.out.println("Digits: " + isDigit);
    System.out.println("Whitespace characters: " + isWhiteSpace);
}
}

```

Output –

```

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac StringAnalyze.java && java StringAnalyze
Enter a string: Hello World 123
Uppercase letters: 2
Lowercase letters: 8
Digits: 3
Whitespace characters: 2

```

6.

My Code –

```

import java.util.Scanner;

public class PasswordValidator
{
    public static void main(String[] args)

```

```

{
    Scanner input = new Scanner(System.in);

    System.out.print("Enter Your Password: ");
    String password = input.nextLine();
    boolean condition = isValid(password);

    if (condition == true)
    {
        System.out.println("\nCongratulations! Your password meets the
criteria.\n");
    }
    else
    {
        System.out.println("Sorry, your password must:\n- Be at least 8
characters long\n- Contain at least one uppercase letter\n- Contain at least one
lowercase letter\n- Contain at least one digit\n- Not contain any whitespace
characters\n");
    }

}

public static boolean isValid(String password)
{
    boolean hasUpperCase = false;
    boolean hasLowerCase = false;
    boolean hasDigit = false;
    boolean hasWhiteSpace = true;
    if (password.length() < 8)
    {
        return false;
    }
    else
    {
        for (int i = 0; i < password.length(); i++)
        {
            if (Character.isUpperCase(password.charAt(i)))
            {
                hasUpperCase = true;
            }
            else if (Character.isLowerCase(password.charAt(i)))
            {
                hasLowerCase = true;
            }
            else if (Character.isDigit(password.charAt(i)))

```

```

        {
            hasDigit = true;
        }
        else if (Character.isWhitespace(password.charAt(i)))
        {
            hasWhiteSpace = false;
        }
    }
    return hasUpperCase && hasLowerCase && hasDigit && hasWhiteSpace;
}
}
}

```

Output –

```

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac PasswordValidator.java && java PasswordValidator
Enter Your Password: Mahfuz12345
"Congratulations! Your password meets the criteria."

manis@DESKTOP-279PI44 MINGW64 /f/RDP/1st Term/Introduction to Programming/Lab/Lab 3
$ cd "/f/RDP/1st Term/Introduction to Programming/Lab/Lab 3/" && javac PasswordValidator.java && java PasswordValidator
Enter Your Password: mahfuz
Sorry, your password must:
- Be at least 8 characters long
- Contain at least one uppercase letter
- Contain at least one lowercase letter
- Contain at least one digit
- Not contain any whitespace characters

```

7.

My Code –

```

import javax.swing.JOptionPane;

public class GUICalculator
{
    public static void main(String[] args)
    {
        String input1 = JOptionPane.showInputDialog("Enter the first number");
        int number1 = Integer.parseInt(input1);

        String input2 = JOptionPane.showInputDialog("Enter the second number");
        int number2 = Integer.parseInt(input2);

        int addition = add(number1,number2);
        int subtraction = sub(number1,number2);
    }
}

```

```

        JOptionPane.showMessageDialog(null, "Addition Result: " + addition + "\n"
+ "Substraction Result: " + subtraction);
    }

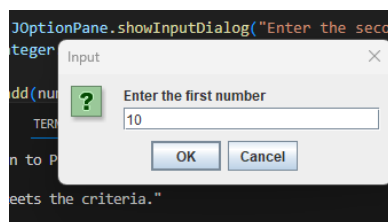
    public static int add(int number1, int number2)
    {
        return number1 + number2;
    }

    public static int sub(int number1, int number2)
    {
        return number1 - number2;
    }
}

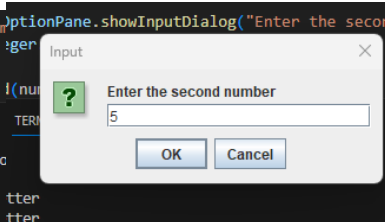
```

Output –

1<sup>st</sup> Input -



2<sup>nd</sup> Input -



Result -

